AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1-66. (Cancelled)

67. (Previously Presented) A method for selectively and epitaxially depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and a non-crystalline surface within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less;

exposing the substrate to a process gas containing neopentasilane; and

depositing an epitaxial layer on the crystalline surface to a predetermined thickness.

68. (Previously Presented) The method of claim 67, wherein the epitaxial layer is an epitaxy silicon layer.

69. (Previously Presented) The method of claim 68, wherein the predetermined temperature is about 600°C.

70. (Previously Presented) The method of claim 68, wherein the process gas further comprises hydrogen gas.

71. (Previously Presented) The method of claim 70, wherein the process gas further comprises a germanium source.

72. (Previously Presented) The method of claim 70, wherein the process gas further comprises a dopant compound.

73. (Previously Presented) The method of claim 68, wherein the epitaxial layer contains phosphorus.

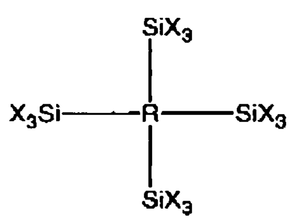
74. (Previously Presented) The method of claim 73, wherein the epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

75. (Previously Presented) The method of claim 67, wherein the process gas further comprises a carbon source.

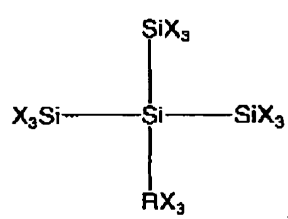
76. (Previously Presented) The method of claim 75, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

77. (Previously Presented) The method of claim 76, wherein the carbon source is selected from the group consisting of CH_4, C_2H_6, C_3H_8, C_4H_{10}, C_2H_4, C_2H_2, derivatives thereof and combinations thereof.

78. (Previously Presented) The method of claim 76, wherein the carbon source is a silicon carbon source comprising a chemical structure:



or



,

wherein R is carbon and X is hydrogen.

79. (Previously Presented) The method of claim 75, wherein the carbon source is methylsilane.

80. (Previously Presented) The method of claim 75, wherein the epitaxial layer comprises silicon carbide.

81. (Previously Presented) The method of claim 80, wherein the epitaxial layer has a carbon concentration of about 5 at% or less.

82. (Previously Presented) The method of claim 81, wherein the carbon concentration is within a range from about 200 ppm to about 2 at%.

83. (Previously Presented) The method of claim 81, wherein the process gas further comprises hydrogen gas.

84. (Previously Presented) The method of claim 83, wherein the process gas further comprises a dopant source.

85. (Previously Presented) The method of claim 83, wherein the epitaxial layer contains phosphorus or germanium.

86. (Previously Presented) The method of claim 85, wherein the epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

87. (Previously Presented) The method of claim 67, wherein the non-crystalline surface includes features containing oxide, nitride or combinations thereof.

88. (Previously Presented) The method of claim 87, wherein the features are left bare after depositing the epitaxial layer.

89. (Previously Presented) The method of claim 87, wherein the features remain covered after depositing the epitaxial layer.

90. (Previously Presented) The method of claim 87, wherein the substrate is exposed to a pretreatment process prior to depositing the epitaxial layer.

91. (Previously Presented) The method of claim 90, wherein the pretreatment process contains exposing the substrate to a HF solution.

92. (Previously Presented) The method of claim 91, wherein the pretreatment process further contains exposing the substrate to a heating process after the HF solution exposure.

93. (Previously Presented) The method of claim 92, wherein the heating process heats the substrate to about 800°C within a hydrogen atmosphere.

94. (Previously Presented) A method for blanket depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and at least one feature surface within a process chamber, wherein the at least one feature surface comprises a material selected from the group consisting of an oxide material, a nitride material or combinations thereof;

heating the substrate to a predetermined temperature of about 700°C or less; and

exposing the substrate to a process gas containing neopentasilane to deposit a silicon-containing blanket layer across the crystalline surface and the feature surfaces, wherein the silicon-containing blanket layer contains a silicon-containing epitaxial layer selectively deposited on the crystalline surface.

95. (Previously Presented) A method for blanket depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less; and

exposing the substrate to a process gas containing neopentasilane and a carbon source to deposit a silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the silicon carbide blanket layer contains a silicon carbide epitaxial layer selectively deposited on the crystalline surface.

96. (Previously Presented) The method of claim 95, wherein the silicon carbide epitaxial layer has a carbon concentration of about 5 at% or less.

97. (Previously Presented) The method of claim 96, wherein the carbon concentration is within a range from about 200 ppm to about 2 at%.

98. (Previously Presented) The method of claim 97, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

99. (Previously Presented) The method of claim 97, wherein the carbon source is methylsilane.

100. (Previously Presented) The method of claim 95, wherein the process gas further comprises hydrogen gas.

101. (Previously Presented) The method of claim 100, wherein the process gas further comprises a dopant source.

102. (Previously Presented) The method of claim 100, wherein the silicon carbide epitaxial layer contains phosphorus or germanium.

103. (Previously Presented) The method of claim 102, wherein the silicon carbide epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

104. (Previously Presented) The method of claim 95, wherein the feature surfaces include oxide features, nitride features or combinations thereof.

105. (Previously Presented) The method of claim 104, wherein the feature surfaces are left bare after depositing the epitaxial layer.

106. (Previously Presented) The method of claim 104, wherein the feature surfaces remain covered after depositing the epitaxial layer.

107. (Previously Presented) A method for blanket depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature; and

exposing the substrate to a process gas containing neopentasilane and a carbon to deposit a silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the silicon carbide blanket layer contains a silicon carbide epitaxial layer selectively deposited on the crystalline surface and a carbon concentration within a range from about 200 ppm to about 2 at%.

108. (Previously Presented) The method of claim 107, wherein the predetermined temperature is about 700°C or less.

109. (Previously Presented) The method of claim 108, wherein the predetermined temperature is about 600°C.

110. (Previously Presented) The method of claim 108, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

111. (Previously Presented) The method of claim 108, wherein the carbon source is methylsilane.

112. (Previously Presented) A method for blanket depositing a doped silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature; and

exposing the substrate to a process gas containing neopentasilane and a dopant source to deposit a silicon-containing blanket layer across the crystalline surface and the feature surfaces, wherein the silicon-containing blanket layer contains a silicon-containing epitaxial layer selectively deposited on the crystalline surface and a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

113. (Previously Presented) A method for blanket depositing silicon-containing a material on a substrate, comprising:

positioning a substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature; and

exposing the substrate to a process gas containing neopentasilane, a carbon source and a dopant source to deposit a doped silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the doped silicon carbide blanket layer contains a silicon carbide epitaxial layer selectively deposited on the crystalline surface.

114. (Previously Presented) The method of claim 113, wherein the silicon carbide epitaxial layer has a carbon concentration of about 5 at% or less.

115. (Previously Presented) The method of claim 114, wherein the carbon concentration is within a range from about 200 ppm to about 2 at%.

116. (Previously Presented) The method of claim 115, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

117. (Previously Presented) The method of claim 115, wherein the carbon source is methylsilane.

118. (Previously Presented) The method of claim 113, wherein the process gas further comprises hydrogen gas.

119. (Previously Presented) The method of claim 118, wherein the silicon carbide epitaxial layer contains phosphorus or germanium.

120. (Previously Presented) The method of claim 119, wherein the silicon carbide epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

121. (Previously Presented) A method for blanket depositing a doped silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature; and

exposing the substrate to a process gas containing neopentasilane, a carbon source and a dopant to deposit a silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the silicon carbide blanket layer contains a

silicon carbide epitaxial layer selectively deposited on the crystalline surface and a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

122. (Previously Presented) The method of claim 121, wherein the predetermined temperature is about 700°C or less.

123. (Previously Presented) The method of claim 122, wherein the predetermined temperature is about 600°C.

124. (Previously Presented) The method of claim 122, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

125. (Previously Presented) The method of claim 122, wherein the carbon source is methylsilane.

126. (Previously Presented) A method for selectively and epitaxially depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and a non-crystalline surface within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less;

exposing the substrate to a process gas containing neopentasilane and a carbon source; and

depositing a silicon carbide epitaxial layer on the crystalline surface to a predetermined thickness.

127. (Previously Presented) The method of claim 126, wherein the silicon carbide epitaxial layer has a carbon concentration within a range from about 200 ppm to about 2 at%.

128. (Previously Presented) The method of claim 127, wherein the carbon source is selected from the group consisting of a silicon carbon source, an alkane source, an alkene source, an alkyne source, derivatives thereof and combinations thereof.

129. (Previously Presented) The method of claim 127, wherein the carbon source is methylsilane.

~~131~~ 130. (Currently Amended) The method of claim 127, wherein the process gas further comprises a dopant source.

~~132~~ 131. (Currently Amended) The method of claim 127, wherein the silicon carbide epitaxial layer contains phosphorus or germanium.

~~133~~ 132. (Currently Amended) The method of claim ~~132~~ 131, wherein the silicon carbide epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

~~134~~ 133. (Currently Amended) A method for selectively and epitaxially depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and a non-crystalline surface within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less;

exposing the substrate to a process gas containing neopentasilane, a carbon source and a dopant source; and

depositing a silicon carbide epitaxial layer on the crystalline surface, wherein the silicon carbide epitaxial layer has a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

~~135~~ 134. (Currently Amended) A method for selectively and epitaxially depositing a silicon-containing material on a substrate, comprising:

positioning a substrate containing a crystalline surface and a non-crystalline surface within a process chamber;

heating the substrate to a predetermined temperature;

exposing the substrate to a process gas containing neopentasilane, a carbon source and a dopant source; and

depositing a silicon carbide epitaxial layer selectively on the crystalline surface, wherein the silicon carbide epitaxial layer has a carbon concentration within a range from about 200 ppm to about 2 at% and a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

~~136~~ 135. (Currently Amended) The method of claim ~~135~~ 134, wherein the predetermined temperature is about 700°C or less.

~~137~~ 136. (Currently Amended) The method of claim ~~136~~ 135, wherein the predetermined temperature is about 600°C.

~~138~~ 137. (Currently Amended) A method for blanket depositing a doped silicon-containing material on a substrate, comprising:

exposing a substrate to pretreatment process containing a HF solution;

positioning the substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less; and

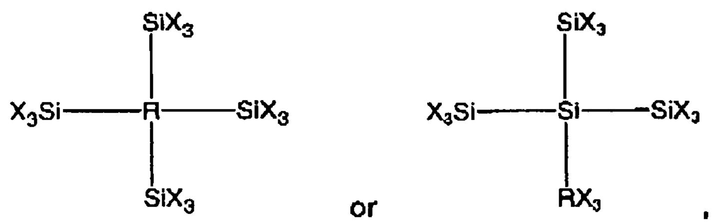
exposing the substrate to a process gas containing neopentasilane and a carbon source to deposit a silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the silicon carbide blanket layer contains a silicon carbide epitaxial layer selectively deposited on the crystalline surface, a carbon concentration within a range from about 200 ppm to about 2 at%, and a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

~~139~~ 138. (Currently Amended) A method for selectively and epitaxially depositing a silicon-containing material on a substrate, comprising:

positioning the substrate containing a crystalline surface and feature surfaces within a process chamber;

heating the substrate to a predetermined temperature of about 700°C or less;

exposing the substrate to a process gas containing a carbon source and a silicon precursor comprising a chemical structure:



wherein each X is independently hydrogen or halogen and R is carbon, silicon or germanium; and

depositing a silicon carbide blanket layer across the crystalline surface and the feature surfaces, wherein the silicon carbide blanket layer contains a silicon carbide epitaxial layer selectively deposited on the crystalline surface, a carbon concentration within a range from about 200 ppm to about 2 at%, and a phosphorus concentration within a range from about 10^{19} atoms/cm^3 to about 10^{21} atoms/cm^3.

~~140~~ 139. (Currently Amended) The method of claim ~~139~~ 138, wherein the silicon precursor comprises a chemical structure: